2/4/16
"Quality is not an act, it is a habit." -Aristotle

HW: "Laws of Exponents" worksheet #3-29 odd

AIM: Laws of Exponents?

Warm Up:

1) Simplify the following: $\frac{1}{3+2i} \cdot \frac{3-2i}{3-2i} = \frac{3-2i}{3^2+2^2}$

$\frac{3-2i}{9+4} = \frac{3-2i}{13} = \frac{3}{13} - \frac{2}{13}i$

HW Check

39) $2+4i = \frac{2+4i}{1}$

$\frac{1}{2+4i} \cdot \frac{2-4i}{2-4i} = \frac{2-4i}{4+16} = \frac{2-4i}{20} = \boxed{\frac{1}{10} - \frac{1}{5}i}$

$\frac{2}{20} - \frac{4}{20}i$

40) $-1+2i$ Multiinverse $\frac{1}{-1+2i}$

$\frac{1}{-1+2i} \cdot \frac{-1-2i}{-1-2i} = \frac{-1-2i}{(-1)^2+(2)^2} = \frac{-1-2i}{1+4} = \frac{-1-2i}{5}$

a b

$\boxed{-\frac{1}{5} - \frac{2}{5}i}$

43) $2 - \frac{1}{2}i$

$\frac{1}{2-\frac{1}{2}i} \cdot \frac{2+\frac{1}{2}i}{2+\frac{1}{2}i} = \frac{2+\frac{1}{2}i}{(2)^2+(\frac{1}{2})^2} = \frac{2+\frac{1}{2}i}{4+\frac{1}{4}}$

a b

$= \frac{2+\frac{1}{2}i}{\frac{17}{4}}$

$\frac{2+\frac{1}{2}i}{\frac{17}{4}} = \frac{4}{17} \cdot \left(2+\frac{1}{2}i\right)$

$\frac{2}{17/4} + \frac{1/2}{17/4}i$ $\boxed{\frac{8}{17} + \frac{2}{17}i}$

Laws of Exponents

1) $x^4 \cdot x^2 = (x \cdot x \cdot x \cdot x) \cdot (x \cdot x) = x^6$

* When multiplying with the same base we add exponents.

2) $\frac{x^6}{x^2} = x^4$

$\frac{x \cdot x \cdot x \cdot x \cdot x \cdot x}{x \cdot x} = x^4$

* When dividing we subtract exponents.

3) $(x^3)^2 = x^6$

$x^3 \cdot x^3 = x^6$

* Power to a power, multiply the exponents.

4) $(xy)^2 = x^2 y^2$

* Product to a power is equal to the product of each factor to the power.

5) $\left(\frac{x}{y}\right)^3 = \frac{x^3}{y^3}$

* A fraction to a power is equal to the top to the power over the bottom to the power.